

6. *South African Nudibranch Mollusca, with Descriptions of New Species, and a Note on some Specimens from Tristan d'Acunha.*

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(With Plates XIX, XX and six Text-figures.)

THE following paper is intended as a starting-point for the study of the Nudibranch Mollusca of South Africa, by bringing together all the records to date, giving brief diagnoses of the families and genera, and coloured figures of some of the commoner species.

Nudibranchs, on account of their brilliant colours and variety of form, are one of the most fascinating groups of Mollusca to collect, but possess the great drawback that after death and preservation both colour and form to a very large extent disappear. Perhaps it is for this reason that so little has been done to investigate the South African fauna. Practically the only collectors have been Mr. Burnup in Natal, Dr. Gilchrist during the course of the Marine Investigations under the Cape Government, and the present writer.

Mr. Burnup's collections were reported on by Sir Charles Eliot, and comprised ten species. Dr. Gilchrist and the s.s. "Pieter Faure" accumulated a moderately large collection, which was sent to Bergh for examination. The result was the addition of some twenty-nine species to the fauna list, of which twenty-six were considered to be novelties.

The present author has had the advantage of being able to observe the living animals, making coloured drawings, and examining the specimens in a fresh state immediately after death. Four species not hitherto recorded from South Africa are here added to the fauna list, and nine are described as new, all of the latter but one having been collected by the author along the littoral of False Bay.

Thus there is evidently a wide scope for collectors to add further species. It should be borne in mind, however, that preserved specimens without coloured sketches of the living animals, or at least detailed notes of the coloration, are of comparatively little use. On account of the lack of such data, and the unsatisfactory condition of

the material, many of Bergh's species are almost or quite unrecognisable even by specialists.

Moreover, owing to their great contractility, specimens which have been put direct into preserving fluids are frequently impossible to dissect and identify satisfactorily. These animals should always be anaesthetised. The writer has used menthol crystals, scattered over the surface of the sea-water in the bowl containing the animals, with very satisfactory results. Other anaesthetics are 70 per cent. alcohol, cocaine, and, according to information given me by Dr. Gill, Epsom salts, added drop by drop to the sea-water. Care must be taken to leave the animals long enough to allow the anaesthetic to destroy all power of contractility, but not long enough for decomposition to set in.

As permanent preservatives, formalin, formol-alcohol, or 70 per cent. alcohol to which a drop or two of glycerine has been added, can be recommended.

It is certain that many of the smaller forms still await discovery in these waters. The best means of collecting these is to gather carefully handfuls of seaweeds, hydroids, encrusting sponges, etc., which grow on the rocks and boulders at low tide, and leave them in a bowl of fresh sea-water overnight. The next morning the Nudibranchs will be found crawling on the sides of the bowl or floating on the surface of the water.

In the Northern Hemisphere there is a marked seasonal migration, the animals coming inshore in the spring and summer months to spawn. In South Africa such a seasonal migration does not seem so marked; at least that is the writer's experience as regards shore-collecting in False Bay and the western coast of the Cape Peninsula. During a short collecting trip in December and January in Natal, at the localities where previously Mr. Burnup had collected in, the writer obtained no Nudibranchs. These observations are mentioned to show how little we know of the biology of the marine life around our shores.

The classification and nomenclature of the *Nudibranchiata* is still *sub judice*. The classification here adopted is mainly that of Bergh, with the removal of the *Duvauceliidae* (*Tritoniidae*) from the *Kladohepatica* in accordance with Eliot's pertinent remarks (1903, Fauna Geogr. Mald. Lacc., vol. ii), and the adoption of Iredale and O'Donoghue's group *Zonobranchiata*. The nomenclature is a greater problem, but it is clear that the laws of priority must be applied, even though this means the disappearance of many names long in use.

A. HOLOHEPATICA.

- 1881. Bergh, Verh. k. k. Zool. bot. Ges. Wien, xxx, p. 236.
- 1890. Bergh, Zool. Jahrb. Abt. Syst., v.
- 1892. *Id.*, Das System der Nudibranchiaten Gasteropoden, p. 79.
- 1924. O'Donoghue, J. Linn. Soc. Lond., Zool., xxxv, p. 542.

Gills usually few in number, situate medio-dorsally behind the middle of the body. Mandibles absent. Liver forming a compact mass, never branched. Two vesiculæ seminales.

In this group are comprised the numerous and varied forms known collectively as "Dorids." They are found in all parts of the world, being especially numerous, large, and brilliantly coloured in the tropics.

Three divisions are represented in South Africa, the *Cryptobranchiata*, the *Porostomata*, and the *Phanerobranchiata*, though these terms are not very satisfactory, and are being discarded by modern writers.

1. CRYPTOBRANCHIATA.

- 1879. Bergh, Arch. Naturg., xxxv, 1, p. 341.
- 1891. *Id.*, Zool. Jahrb. Abt. Syst., vi, p. 103.
- 1892. *Id.*, Das System, p. 83.

Gills contiguous at their bases, retractile (almost always) into a common cavity (except in *Hexabranchus*). Rhinophores always with perfoliate club. Pharynx never suctorial. Radula with the lateral teeth not differentiated.

For purposes of grouping South African representatives it may be noted that :

- (i) The gills are retractile into separate cavities in the *Hexabranchiidae*.
- (ii) A labial armature is present only in the *Discodoridae* and the genus *Glossodoris*.
- (iii) The form is elongate slug-like in the *Glossodoridae*, very depressed in the *Platydoridae*.
- (iv) The gills are simply pinnate only in the genera *Doridigitata*, *Glossodoris*, and *Diaulula* (?) *morosa* Bgh.

FAMILY HEXABRANCHIDAE.

- 1892. Bergh, Das System, p. 99.
- 1924. O'Donoghue, J. Linn. Soc. Lond., Zool., xxxv, p. 545.

Body elongate-oval, soft, depressed, smooth, margin wide, undulate. Tentacles large, foliaceous, margin crenulate. Gills 6 to 8, arborescent, retractile into separate cavities, or more strictly speaking contractile. Foot broad. Labial armature strong, composed of minute hooks. Radula without central tooth, laterals numerous, hamate without accessory denticles. Penis very long, unarmed.

Gen. HEXABRANCHUS Ehrenbg.

1828. Ehrenberg, Symb. Phys.

1892. Bergh, *loc. cit.*, p. 99.

1905. *Id.*, Siboga Exp., Monogr. 50, p. 99.

1908. Eliot, J. Linn. Soc. Lond., xxxi, p. 97.

With the characters of the family.

**Hexabranchnus adamsi* Ad.

Hexabranchnus adamsi. Gray MSS.

- | | | | |
|-------|---|--------------------|---|
| 1858. | „ | „ | H. and A. Adams, Gen. Moll., ii,
p. 59, pl. 63, fig. 9. |
| 1905. | „ | „ | Eliot, Proc. Mal. Soc., vi, p. 235. |
| 1905. | „ | <i>punctatus</i> . | Bergh, Siboga Exp., Monogr. 50, p.
92, pl. xiii, fig. 27 (radula tooth). |
| 1908. | „ | <i>adamsi</i> . | Eliot, J. Linn. Soc. Lond., xxxi, p. 97. |
| 1910. | „ | „ | Smith, Ann. Nat. Mus., ii, p. 180
(listed). |

Locality.—Scottburgh, Natal.

Distribution.—East Indies and Pacific Ocean.

Eliot in 1908 thinks that the Natal specimen should be referred to Bergh's species, which is described as being dirty-yellow with scattered black specks on the back. Whether it is the same as that figured by Adams remains uncertain.

FAMILY ARCHIDORIDAE.

1892. Bergh, Das System, p. 100.

1923. Iredale and O'Donoghue, Proc. Mal. Soc., xv, p. 226 (*Dorodigitatidae*).

1924. O'Donoghue, J. Linn. Soc. Lond., Zool., xxxv, p. 547 (*Archidoridae*).

* Not represented in S.A. Mus. Collections.

Body not hard, somewhat depressed, margin not narrow. Back tuberculate or granulate. Tentacles small. Gills nearly always 3- or 4 pinnate. Foot rather broad. No labial armature. Radula without central tooth, laterals numerous, hamate. Penis usually unarmed.

Gen. ARCHIDORIS Bgh.

1878. *Archidoris*. Bergh, Malac. Unters, xiv, p. 616.
 1892. „ „ *Id.*, Das System, p. 100.
 1923. „ „ Iredale and O'Donoghue, Proc. Mal. Soc., xv,
 p. 228.

Tentacles stout, longitudinally grooved. Gills not numerous, 3 to 4 pinnate. Vagina unarmed.

**Archidoris capensis* Bgh.

1907. *Archidoris capensis*. Bergh, Mar. Invest. S.A., v, p. 42.
 1910. „ „ Smith, Ann. Nat. Mus., ii, p. 176
 (listed).

Back shagreened.

Locality.—Off Cape Point.

**Archidoris granosa* Bgh.

1907. *Archidoris granosa*. Bergh, Mar. Invest. S.A., v, p. 43, pl. v,
 figs. 16-18 (nodules of back, radula).
 1910. „ „ Smith, Ann. Nat. Mus., ii, p. 176 (listed).

Back nodulose.

Locality.—Off Tongaat River, Natal, 36 fathoms; Woodstock Beach, Table Bay.

**Archidoris ? scripta* Bgh.

1907. *Archidoris ? scripta*. Bergh, Mar. Invest. S.A., v, p. 44,
 pl. xi, figs. 19-25 (animals, radula,
 ♂ reprod. organ).
 1910. „ „ Smith, Ann. Nat. Mus., ii, p. 176
 (listed).

Back smooth. White, back with irregularly scattered black points and lines, margin yellow.

Locality.—Itongazi River, Natal.

Systematic position very doubtful.

Gen. DORIDIGITATA D'Orb.

1839. *Doridigitata*. D'Orbigny in Webb and Berthelot, Ile Canar., ii, 2, Moll., p. 39.
 1878. *Staurodoris*. Bergh, Malac. Unters., xiii, p. 578.
 1892. „ *Id.*, Das System, p. 101.
 1923. *Doridigitata*. Iredale and O'Donoghue, Proc. Mal. Soc., xv, p. 229.

Back tuberculate. Margins of the rhinophoral and branchial cavities protected with elevated valve-like tubercles. Tentacles short, stout, externally grooved. Gills rather numerous, *simply pinnate*. Penis and vagina unarmed.

Doridigitata verrucosa (Cuv. emend. Bgh.).

1878. *Staurodoris verrucosa*. Cuv. Bergh, *loc. cit.*, p. 578 (non *verrucosa* Linn.).
 1907. „ „ Bergh, Mar. Invest. S.A., v, p. 46, pl. xi, figs. 26, 27 (radula).

Greyish or yellowish-brown, simulating a sponge and barnacle shells which grow on the rocks between tide marks.

Locality.—St. James, False Bay ; Saldanha Bay ; low tide.

Distribution.—Mediterranean and east and west sides of Atlantic.

FAMILY DISCODORIDAE.

1892. Bergh, Das System, p. 102.
 1905. *Id.*, Siboga Exp., Monogr. 50, p. 98.

Body not hard, depressed, margin rather wide. Back minutely granulate. Tentacles digitiform. Gills nearly always 3 or 4 pinnate. Foot rather broad. Labial armature formed of minute rods. Radula without central tooth, laterals numerous, hamate. Penis nearly always unarmed.

Gen. DISCODORIS Bgh.

1888. *Discodoris*. Bergh, Malac. Unters., xvi, p. 805.
 1892. „ *Id.*, Das System, p. 102.
 1906. „ Eliot, Proc. Zool. Soc. Lond., ii, p. 651.
 1910. „ *Id.*, Tr. Linn. Soc. Lond., xiii, p. 421.

Body soft, round or oval. Branchial aperture slightly crenulate, stellate, or bilabiate. Upper lip of the anterior margin of foot more or less incised. Large prostatic gland.

**Discodoris coerulescens* Bgh.

1888. *Discodoris coerulescens*. Bergh, *loc. cit.*, p. 805, pl. lxxxiii, figs. 6-12.

1910. „ „ (?) juv. Eliot, *Ann. Nat. Mus.*, ii, p. 222.

Back rough, whitish mottled with irregular darker patches composed of black lines of varying length, thickness, and direction; foot whitish.

Locality.—Natal coast.

Distribution.—Mauritius.

Gen. GEITODORIS Bgh.

1892. *Geitodoris*. Bergh, *Das System*, p. 103.

1894. „ *Id.*, *Bull. Mus. Comp. Zool.*, xxv, 10, p. 162.

1907. „ *Id.*, *Mar. Invest. S.A.*, v, p. 47.

Body oval, depressed, back minutely granulate or smooth. Upper lip of the anterior margin of foot incised with prominent lobes. Inner laterals strong, outer feeble, thin, not hamate. No prostatic gland.

**Geitodoris capensis* Bgh.

1907. *Geitodoris capensis*. Bergh, *loc. cit.*, p. 47, pl. xii, figs. 2-5 (labial armature and radula).

1910. „ „ Smith, *Ann. Nat. Mus.*, ii, p. 176 (listed).

Colour when alive yellow.

Locality.—Off Glendower Beacon (Port Alfred).

FAMILY DIAULULIDAE.

1892. Bergh, *Das System*, p. 105.

Body not hard, or rather soft, more or less depressed. Back usually minutely villous, often velvety. Tentacles digitiform. Branchial aperture round, crenulate, gills tripinnate. Foot anteriorly

bilabiate, the upper lip medianly incised. No labial armature. Radula without central tooth, laterals numerous, hamate. Penis as a rule unarmed.

Gen. DIAULULA Bgh.

1880. *Diaulula*. Bergh, Sc. Res. Explor. Alaska, pt. 1, p. 189.

1892. „ *Id.*, *loc. cit.*, p. 105.

1905. „ *Id.*, Siboga Exp., Monogr. 50, p. 118.

1907. „ *Id.*, Mar. Invest. S.A., v, p. 48.

Back velvety. All the lateral teeth hamate. Prostate large.

**Diaulula capensis* Bgh.

1907. *Diaulula capensis*. Bergh, *loc. cit.*, p. 48, pl. v, figs. 19–22 (skin and radula).

1910. „ „ Smith, Ann. Nat. Mus., ii, p. 177 (listed).

Gills tripinnate. Colour when alive light brown.

Locality.—Mossel Bay, 11 fathoms. In the original description Seal Island is mentioned in brackets after Mossel Bay, which seems to indicate that the label was erroneous, and that False Bay was intended.

**Diaulula ? morosa* Bgh.

1907. *Diaulula ? morosa*. Bergh, *loc. cit.*, p. 50, pl. v, figs. 23–26 (skin and radula).

1910. „ „ Smith, Ann. Nat. Mus., ii, p. 177.

The systematic position of this species is uncertain. The gills are simply pinnate, which is quite unique in the family. Back dark greenish-gray, foot white.

Locality.—Mossel Bay, shore.

Gen. THORDISA Bgh.

1884. *Thordisa*. Bergh, “Challenger” Rep., x, p. 106.

1892. „ *Id.*, Das System, p. 106.

1905. „ *Id.*, Siboga Exp., Monogr. 50, p. 121.

1906. „ Eliot, Proc Zool. Soc. Lond., ii, p. 654.

1907. „ Bergh, Mar. Invest. S.A., v, p. 50.

Tentacles tuberculiform. Outermost lateral teeth pectinate.

**Thordisa burnupi* Eliot.

1910. *Thordisa burnupi*. Eliot, Ann. Nat. Mus., ii, p. 223.

Orange, closely sprinkled with lighter orange or yellow spots, with numerous black and yellow bristles. Rhinophores white with a reddish line on inner side. Foot yellow with black spots around its upper side. Only 17 hamate lateral teeth.

Locality.—Natal coast.

**Thordisa punctulifera* Bgh.

1907. *Thordisa punctulifera*. Bergh, *loc. cit.*, p. 50, pl. vi, figs. 1-4 (skin and radula).

1910. „ „ Smith, Ann. Nat. Mus., ii, p. 177 (listed).

Uniform white with small black roundish and irregular spots on back, sometimes also on foot-brim. About 100 hamate lateral teeth.

Locality.—False Bay, 23 fathoms.

FAMILY PLATYDORIDAE.

1892. Bergh, Das System, p. 109.

1924. O'Donoghue, J. Linn. Soc. Lond. Zool., xxxv, p. 550 (*Platy-dorididae*).

Body firm, coriaceous, deplanate, oval or round. Back smooth or minutely granulate, margin wide. Tentacles digitiform. Foot anteriorly with the upper lip deeply fissured. Labial armature absent. Radula without central tooth, laterals numerous, hamate. Prostate large.

Gen. PLATYDORIS Bgh.

1888. *Platydoris*. Bergh, Malac. Unters., xvi, p. 801.

1892. „ Bergh, Das System, p. 109.

1903. „ Eliot, Proc. Zool. Soc. Lond., ii, p. 374.

1905. „ *Id.*, J. Conchol., ii, p. 252.

1905. „ Bergh, Siboga Exp., Monogr. 50, p. 135.

1906. „ Eliot, Proc. Zool. Soc. Lond., p. 645.

1910. „ *Id.*, Tr. Linn. Soc. Lond., xiii, p. 425.

Back granulate. Penis armed internally with large spines, vagina similar, or at least with strong cuticle.

Platydoris scabra (Cuv.).

1806. *Doris scabra*. Cuvier, Ann. Mus. Paris, iv, p. 466.
 1877. „ *coriacea*. Abraham, Proc. Zool. Soc. Lond., p. 247, pl. xxvii, figs. 1-4 (whole animal).
 1888. *Platydoris eurychlamys*. Bergh, Malac. Unters., xvi, p. 802, pl. lxxxiii, figs. 30-32.
 1903. „ *coriacea*. Smith, Proc. Malac. Soc., v, p. 357.
 1910. „ *scabra*. Eliot, loc. cit., p. 426 (synonymy).

Locality.—South Africa.

A young specimen, 28 mm. long by 19 mm. wide, which appears to belong to this species, was taken at Durban (H. W. Bell-Marley, July 1918). In colour it is light grey and mottled with subcircular darker patches.

Distribution.—Seychelles, East Indies, Sir C. Hardy's Islands (Queensland).

FAMILY GLOSSODORIDAE.

1892. Bergh, Das System, p. 111 (*Chromodorididae*).
 1924. O'Donoghue, J. Linn. Soc. Lond., Zool., xxxv, p. 552 (*Glossodorididae*).

Body elongate, compressed, rather soft, brightly coloured, usually with stripes or spots. Margin rather broad anteriorly and more especially posteriorly, but narrow laterally. Back almost always smooth. Tentacles small, conical, usually reversible. Gills usually simply pinnate. Labial armature, when present, strong, formed of minute hooks. Radula sometimes with spurious minute central tooth, laterals numerous, hamate, and usually with secondary denticles, the 1st lateral with denticles on both sides. No proper ventricle. Penis unarmed.

Gen. GLOSSODORIS Ehrenb.

1831. *Glossodoris*. Ehrenberg, Symb. Phys.
 1855. *Chromodoris*. Alder and Hancock, Br. Nudibr. Moll., pt. 7, p. xvii.
 1879. „ Ihering, Malak. Bl., ii, p. 5.
 1892. „ Bergh, Das System, p. 112.
 1904. „ Eliot, Proc. Zool. Soc. Lond., I, ii, p. 382.
 1905. „ Bergh, Siboga Exp., Monogr. 50, p. 142.
 1905. „ Farran in Herdman's Ceyl. Pearl Fish. Suppl. Rep., xxi, p. 341.

1906. *Chromodoris*. Eliot, Proc. Zool. Soc. Lond., ii, p. 640.
 1906. „ MacFarland, Bull. Bur. Fish., xxv, p. 128
 (references).
 1907. „ Bergh, Mar. Invest. S.A., v, p. 55.
 1924. *Glossodoris*. O'Donoghue, J. Linn. Soc. Lond., Zool., xxxv,
 p. 553 (synonymy).

Body elongate or elongate-oval, smooth (with few exceptions), margin simple. Gills, 5 to nearly 30 in number, typically simply pinnate, but sometimes some are bifid or even multifid. Labial armature strong.

A very large genus, the species of which are mostly brightly coloured. The colours and pattern are often variable, and many of the species are merely synonyms, though in many cases it is almost impossible to determine accurately some of the earlier described species.

Synopsis of the South African Species.

1. Radula teeth simply bifid.
 - a. Gills simply pinnate *euelpis*.
 - b. Gills bipinnate *capensis*.
2. Radula teeth with denticulations under the two prongs.
 - a. Glandular knobs under mantle-edge *runcinata*.
 - b. No glandular knobs *annulata, carnea, lineata*.
3. Radula teeth denticulate *albolimbata, porcata*

Glossodoris capensis n. sp.

(Plate XIX, figs. 3, 4.)

Translucent white with a fuscous tinge dorsally; mantle edge, except in front of rhinophores, whitish-purple, with a series of irregular blotches of similar colour each with a chocolate-purple centre; these blotches extend round in front of the rhinophores and behind the gills; the back with some irregularly scattered chocolate spots, and 3 or 5 longitudinal white lines, the outermost of which is continued round in front of the rhinophores and behind the gills; sides of foot unspotted; tail with purplish and chocolate blotches; clubs of rhinophores and axes of gills orange.

Labial armature composed of slender, straight, conical rods. All the teeth of the radula simply bifid, the 1st lateral as usual trifid.

Gills about 10, all bipinnate.

Length up to 60 mm.; breadth and height about 8 mm.

Locality.—St. James, False Bay, low tide (April 1912, K.H.B. Not common).

The general scheme of coloration is comparable with that of the specimens from Zanzibar identified by Eliot as a variety of *magnifica* Q. and G. (1904, Proc. Zool. Soc., p. 397), but lack the yellow border to the mantle and the violet and chocolate markings along side of foot. The bipinnate gills and simply bifid teeth constitute a clear specific difference.

**Glossodoris euelpis* (Bgh.).

1907. *Chromodoris euelpis*. Bergh, Mar. Invest. S.A., v, p. 56,
pl. vi, figs. 14–17 (labial armature
and radula).
1910. „ „ Smith, Ann. Nat. Mus., ii, p. 178
(listed).

Yellowish, back and sides very finely punctuated with black dots.
Locality.—Off Umvoti River, Natal, 45 fathoms.

**Glossodoris albolimbata* (Bgh.).

1907. *Chromodoris albolimbata*. Bergh, Mar. Invest. S.A., v, p. 55,
pl. vi, figs. 18–24 (gill, labial
armature, and radula).
1910. „ „ Smith, Ann. Nat. Mus., ii, p. 178
(listed).
1923. „ „ Odhner, Göteb. Vet. Handl., xxvi.
1926. „ „ Tomlin, Ann. Nat. Mus., v, p. 286.

Reddish-white, margin of back chalk-white.

Locality.—Agulhas Bank, 20 fathoms.

**Glossodoris carnea* (Bgh.).

1888. *Chromodoris carnea*. Bergh, Malac. Unters., xvi, 2, p. 836,
pl. lxxxiii, figs. 20–29.
1910. „ „ Eliot, Ann. Nat. Mus., ii, p. 225.

Back whitish with a few longitudinal white lines, sparsely and irregularly spotted with crimson and orange, margin with an interrupted band of plum colour, extreme edge white, head, tip of tail, and gills white with orange lines, rhinophores white with an orange spiral line, under surface white.

Locality.—Natal coast.

Distribution.—Mauritius.

**Glossodoris annulata* (Eliot).

1904. *Chromodoris annulata*. Eliot, Proc. Zool. Soc. Lond., i, p. 389,
pl. xxiv, figs. 1-3 (coloured fig.,
gills, radula).
1905. „ „ *Id.*, Proc. Malac. Soc., vi, p. 233.
1910. „ „ Smith, Ann. Nat. Mus., ii, p. 179
(listed).

Dirty grey with white spots, a large purple blotch occupying nearly the whole back behind rhinophores. Gills 9 to 16, with a dark stripe down inner and another down outer edge. Teeth with 8 to 10 denticles.

The original description and the coloured figure show the coloration as follows: translucent white with yellow spots, a deep purple border round the margin, two rings of the same colour around the rhinophoral and branchial areas, underside and sides of foot white, yellow spots on tail, rhinophores and a stripe down inner and outer margins of gills deep purple. Eliot notes that the preserved specimens became reddish-purple with white spots, with no trace of the border and rings of purple.

Locality.—Scottburgh, Natal.

Distribution.—Zanzibar.

**Glossodoris lineata* (Soul.).

1852. *Doris lineata*. Souleyet, Voy. Bonite, ii, p. 453, pl. xxv, figs.
5-9 (coloured fig. of animal, gills).
1904. „ „ Eliot, Proc. Zool. Soc. Lond., i, p. 396, pl.
xxiv, fig. 7.
1905. „ „ *Id.*, Proc. Malac. Soc., vi, p. 233.
1910. „ „ Smith, Ann. Nat. Mus., ii, p. 179 (listed).

Bluish-white with 5 raised lines along back. Gills, 11. Rhinophores and gills probably red in life. Teeth bifid with 4 to 5 denticles. Souleyet describes the colour as being pale yellow with longitudinal violaceous lines, rhinophores and gills orange.

Locality.—Scottburgh, Natal.

Distribution.—Sandwich Islands.

**Glossodoris porcata* (Bgh.).

1888. *Chromodoris porcata*. Bergh, Malac. Unters., xvi, 2, p. 831,
pl. lxxxii, figs. 1-8.
1910. „ „ Eliot, Ann. Nat. Mus., ii, p. 224.

Back whitish, irregularly mottled with yellowish-brown, with a few irregular plum-coloured blotches all round near the margin. Rhinophores brown with white spiral lines. Gills and under surface white. Bergh describes the colour as milky or greenish-white, with violet points everywhere except on sole, back lemon-yellow, rhinophores citron with the branches colourless or yellowish. In one case the two posterior gills were bifid.

Locality.—Natal Coast.

Distribution.—Mauritius.

**Glossodoris runcinata* (Bgh.).

1877. *Chromodoris runcinata*. Bergh, Semper's Reise, xii, p. 479, pl. li, figs. 32, 33, pl. liii, figs. 5-12 (Philippines).
 1904. „ „ Eliot, Proc. Zool. Soc. Lond., i, p. 393.
 1905. „ „ *Id.*, Proc. Malac. Soc., vi, p. 232.
 1910. „ „ Smith, Ann. Nat. Mus., x, p. 178 (listed).

Bluish-white marked with yellow or orange and dark blue, both colours forming a reticulate mottling as well as isolated spots. Gills 12 to 13, grey, red, or yellowish. Rhinophores red. Teeth with very fine, often obscure, denticles under the two prongs. About 8 glandular knobs under the mantle-margin posteriorly.

Locality.—Scottburgh, Natal.

Distribution.—Philippines, east coast of Africa.

**Glossodoris* sp.

1907. *Chromodoris* sp. Bergh, Mar. Invest. S.A., v, p. 57, pl. vi, figs. 25, 26 (labial armature and radula).
 1910. „ „ Smith, Ann. Nat. Mus., ii, p. 178 (listed).
 Whitish, gills grey. Back covered with small round tubercles.
Locality.—False Bay, 23 fathoms.

Gen. APHELODORIS Bgh.

1879. *Aphelodoris*. Bergh, Malakozool. Blätt., n.f. I, p. 107.
 1892. „ „ *Id.*, loc. cit., p. 120.
 1907. „ „ *Id.*, Mar. Invest. S.A., v, p. 58.
 1924. „ „ O'Donoghue, J. Linn. Soc. Lond., Zool., xxxv, p. 556.

Body similar in form to *Glossodoris*, but (pallial) margin and foot narrower. Tentacles truncate. Gills tripinnate. No labial armature.

Aphelodoris brunnea Bgh.

(Plate XIX, figs. 5, 6.)

1907. ? *Aphelodoris brunnea*. Bergh, *loc. cit.*, p. 58, pl. xi, figs. 28, 29, pl. xii, fig. 1 (radula and gen. organs).

In life the tail does extend a short way beyond the back. The species is rather variable in the extent of the brown markings on the back. The animal swims energetically in water by rapid contortions like a detached lizard's tail.

Length.—Up to 60 mm.

Colour.—White or creamy with irregular chestnut-brown markings, variable in extent on the back, a few similarly coloured spots on the sides, gills veined with same colour, rhinophore club brown or white.

Locality.—St. James and Kalk Bay (False Bay), low-tide (May and August, K.H.B.).

Gen. CHROMODORIDELLA Eliot.

1905. *Chromodoridella*. Eliot, Proc. Malac. Soc., vi, p. 233.

A *Chromodorid* [*Glossodoris*] with the branchial pocket not on the dorsal surface, but on underside of body, pointing downward. Perhaps a monstrosity, but there is no sign of injury (Eliot).

**Chromodoridella mirabilis* Eliot.

1905. *Chromodoridella mirabilis*. Eliot, *loc. cit.*, p. 233.

1910. ,, ,, Smith, Ann. Nat. Mus., ii, p. 179
(listed).

Very like *C. semperi* in shape, colour, radula, and labial armature (*cf.* Bergh, Malac. Unters., xi, p. 482), 21 mm. Dirty white with numerous deep yellow spots and fewer scattered green-blue spots, both arranged quite irregularly, but fewer at sides. Sole colourless. Outer margin of foot thickened but not grooved.

Mantel margin thin, distinct. Rhinophores yellow, stout, mace-like, and ca. 15 perfoliate. Twelve simply pinnate branchiae. Radula teeth bifid, innermost teeth with an accessory denticle, and the outermost, which are fairly tall and straight, have 2 to 3. Fifty-eight rows. Maximum number of teeth on each side is ca. 80 (Eliot).

Locality.—Scottburgh, Natal.

2. POROSTOMATA.

1876. Bergh, Malac. Unters, x.

1892. *Id.*, Das System, p. 121.

1905. *Id.*, Siboga Exp., Monogr. 50, p. 168.

Mouth-opening pore-like. Pharynx suctorial. No mandibles or radula.

FAMILY DENDRODORIDAE.

1892. Bergh, Das System, p. 122 (*Doriopsidae*).

1924. O'Donoghue, J. Linn. Soc. Lond., Zool., xxxv, p. 560
(*Dendrodorididae*).

Body nearly always soft and similar in shape to the true Dorids. Tentacles very short. Rhinophores and gills as in true Dorids. Back smooth or tuberculate, margin usually wide and undulate. Foot broad. Oral tube not glandular. Posterior extremity of liver deeply incised. Penis armed with hooks.

Although at first sight extremely like an ordinary "Doris," these forms are at once distinguished by the pore-like mouth and the very small tentacles, and a glance at the internal anatomy will show the characteristic incision at the end of the liver (which distinguishes this family from the *Phyllidiidae*), and the absence of the projecting radula sac.

Gen. DENDRODORIS Ehrenb.

1831. *Dendrodoris*. Ehrenberg, Symb. Phys.

1860. *Doriopsis*. Pease, Proc. Zool. Soc. Lond., p. 32.

1864. *Doridopsis*. Alder and Hancock, Tr. Zool. Soc., v, p. 124.

1865. „ *Id.*, Tr. Linn. Soc., xxv, 2, p. 189.

1871. *Doriopsis*. Pease, Amer. J. Conch., vi, p. 299.

1875. „ Bergh, J. Mus. Godeffray, viii, p. 82.

1876. „ *Id.*, Malac. Unters, x, p. 384.

1890. „ *Id.*, *ibid.*, xvii, p. 963.

1892. „ *Id.*, Das System, p. 126.

1906. *Doridopsis*. Eliot, Proc. Zool. Soc. Lond., ii, p. 661.

1924. *Dendrodoris*. O'Donoghue, *loc. cit.*, p. 560 (synonymy).

Back soft, smooth. Buccal ganglia situated in the posterior part of the bulbus pharyngeus.

Synopsis of the South African Species.

1. Whitish, margin of back with roundish black patches. Gills 5. *capensis*.
2. Whitish, margin and front part of back blackish, also a few black patches over rest of back. Skin full of spicula. Gills 6. *callosa*.
3. Bluish. Gills 8 *caesia*.
4. Greyish. Gills 6 *D. sp.*
5. Black. Gills 8-10 *nigra*.

**Dendrodoris capensis* (Bgh.).

1907. *Doriopsis capensis*. Bergh, Mar. Invest. S.A., v, p. 60, pl. xiv, fig. 4 (hooks on penis).

1910. „ „ Smith, Ann. Nat. Mus., ii, p. 179 (listed).

Yellowish-white, margin with black patches. Gills 5, their tips grey.

Locality.—Off Umhlanga River, Natal.

**Dendrodoris callosa* (Bgh.).

1907. *Doriopsis callosa*. Bergh, Mar. Invest. S.A., v, p. 61, pl. viii, figs. 1-4 (armature of penis, spicula, bulbus pharyngeus).

1910. „ „ Smith, Ann. Nat. Mus., ii, p. 179 (listed).

Whitish, margin and fore part of back and a few patches on the back blackish. Skin with numerous long spicules. Gills 6.

Locality.—False Bay, 17 to 27 fathoms.

**Dendrodoris caesia* (Bgh.).

1907. *Doriopsis caesia*. Bergh, Mar. Invest. S.A., v, p. 62.

1910. „ „ Smith, Ann. Nat. Mus., ii, p. 180 (listed).

Bluish when alive. Gills 8.

Locality.—False Bay, 10 fathoms.

**Dendrodoris* sp.

1907. *Doriopsis* sp. Bergh, Mar. Invest. S.A., v, p. 63, pl. viii, figs. 5, 6 (penis and armature).

1910. „ „ Smith, Ann. Nat. Mus., ii, p. 180 (listed).

Whitish, sides and back with grey patches. Gills 6.

Locality.—False Bay, 10 fathoms.

Dendrodoris nigra (Stimps.).

1855. *Doris nigra*. Stimpson, Proc. Ac. Nat. Sci. Philad., vii, p. 380.
1864. „ „ Alder and Hancock, Tr. Zool. Soc. Lond., v, p. 128, pl. xxxi, figs. 13-16.
1881. *Doriopsis nigra* var. *coerulea*. Bergh, Jap. Nudibr. Verh. Zool. Bot. Ges. Wien, xxx, p. 181.
1888. „ „ var. *nigerrima*. *Id.*, Mal. Unters., xvi, p. 842.
1903. „ „ Eliot, Fauna Mald. Lacc. Archipel., ii, p. 560.
1905. „ „ and var. *luteopunctata*. Bergh, Siboga Exp., Monogr. 50, p. 169, pl. ii, fig. 13, and p. 170, pl. ii, fig. 14.
1924. *Dendrodoris nigra*. O'Donoghue, J. Linn. Soc. Lond., xxxv, p. 561.

Gills 8 to 10. Black, with or without yellowish specks, and a more or less distinct yellowish margin, tips of the rhinophores yellow or whitish.

Locality.—Mozambique, low tide (November 1912, K.H.B.).

Distribution.—Indo-Pacific to Japan and W. Australia.

Gen. DORIOPSISILLA Bgh.

1880. *Doriopsilla*. Bergh, Jahrb. d. Malakozool. Ges., vii, p. 316.
1892. „ *Id.*, Das System, p. 131.
1906. „ Eliot, Proc. Zool. Soc. Lond., ii, p. 663.

Back somewhat hard, granulate. Buccal ganglia situated in the front part of the bulbous pharyngeus.

Doriopsilla capensis Bgh.

1907. *Doriopsilla capensis*. Bergh, Mar. Invest. S.A., v, p. 64, pl. viii, fig. 7 (penis).
1910. „ „ Smith, Ann. Nat. Mus., ii, p. 180 (listed).

Whitish, nodules of the back white.

Locality.—Agulhas Bank, and off Saldanha Bay, 190 fathoms.

INCERTAE SEDIS.

**Doris natalensis* Krss.

1848. *Doris natalensis*. Krauss, Südafrik. Moll., p. 35.

1903. „ „ Smith, Proc. Mal. Soc., v, p. 357 (listed).

“D. corpore ovato, crasso, molli, supra maculis nigris picto, verrucis magnis, inaequalibus, saepius granulatis, medio punctatis oblecto; pallio dilatato, postice emarginato; lobis branchialibus 5 ramosis.”
—(Krauss).

Locality.—Natal.

**Doris* (?) *pseudida* Bgh.

1907. *Doris* ? *pseudida*. Bergh, Mar. Invest. S.A., v, p. 52, pl. vi, figs. 7 to 8 (radula).

1910. „ „ Smith, Ann. Nat. Mus., ii, p. 177 (listed).

Gills 6, tripinnate. Whitish, a white line along margin. No labial armature.

Locality.—Table Bay, 154 fathoms.

Doris ? *perplexa* Bgh.

1907. *Doris* ? *perplexa*. Bergh, Mar. Invest. S.A., v, p. 53, pl. vi, figs. 5, 6 (radula).

1910. „ „ Smith, Ann. Nat. Mus., ii, p. 177 (listed).

Whitish, grey in front. Gills 6, simply pinnate. No labial armature.

Locality.—Agulhas Bank, 39 fathoms.

**Doris* (?) *glabella* Bgh.

1907. *Doris* ? *glabella*. Bergh, Mar. Invest. S.A., v, p. 54, pl. vi, figs. 9–13 (gill, labial armature, radula).

1910. „ „ Smith, Ann. Nat. Mus., ii, p. 177 (listed).

Yellowish-white, gills yellowish, rhinophores brownish. Gills 10, simply pinnate. Labial armature present.

Locality.—False Bay, 30 fathoms.

**Doris* (?) *kalkensis* n. sp.

(Plate XIX, fig. 9.)

A single specimen of a large Dorid was found at low tide at St. James, False Bay (February 1912, K.H.B.). A coloured drawing

was made from the living animal, which is here reproduced, but the specimen was accidentally destroyed while being preserved before any morphological notes were taken. No further specimens have since come to hand. Nevertheless it seems worth while publishing the coloured figure, as from it living specimens can be easily identified.

The general colour of the back is red, fading to white towards the mantle edges, where there is a blue border composed of numerous small dots and specks; the tail is pale with orange and blue dots; the rhinophores red with brown clubs; the gills orange with numerous blue specks.

There is a strong likeness in the scheme of coloration to Kelaarts' "*Doris*" *elizabethina*, figured by Eliot (Proc. Zool. Soc. Lond., 1906, pl. xliii, fig. 3), and which has not yet been recognised and placed in its true genus.

The specific name is from Kalk Bay, a locality near St. James in False Bay.

3. PHANEROBRANCHIATA.

- 1879. Bergh, Arch. Naturg. Abr. Syst., xxxv, i, p. 341.
- 1879. *Id.*, Verh. k. k. Zool. bot. Ges. Wien, xxix, p. 599.
- 1880. *Id.*, *ibid.*, xxx, p. 629.
- 1883. *Id.*, *ibid.*, xxxiii, p. 135.
- 1892. *Id.*, Das System, p. 137.

Gills not retractile into a common hollow. Rhinophores usually with perfoliate club. Pharynx sometimes with suctorial apparatus. Radula with lateral teeth differentiated into strong inner ones and feebler outer ones.

FAMILY EUPHURIDAE.

- 1892. Bergh, Das System, p. 142 (*Polyceridae*).
- 1923. Iredale and O'Donoghue, Proc. Mal. Soc., xv, p. 229 (*Euphuridae*).
- 1924. O'Donoghue, J. Linn. Soc. Lond., Zool., xxxv, p. 564 (*Euphuridae*).

Body more or less elongate, dorso-lateral margin more or less prominent. Gills usually few. Foot usually narrow. No suctorial apparatus.

Key to South African Genera.

I. Dorso-lateral margin of body with processes.

A. Tail not crested.

1. Frontal margin only with processes.

a. Processes simple, digitate. Mandibles with wings . . . *Polycera*.

b. Frontal margin crenulate. Mandibles without wings. . . *Palio*.

2. Frontal and dorso-lateral margins with processes.

a. Processes clavate *Triopa*.

b. Processes arborescent :

i. Body depressed *Kalinga*.

ii. Body not depressed *Euplocamus*.

B. Tail crested *Plocamopherus*II. Dorso-lateral margin of body not conspicuous, without processes . . . *Nembrotha*.

Gen. POLYCERA Cuv.

1817. *Polycera*. Cuvier, Regne Anim, ii, p. 390.

1879. „ Bergh, Verh. k. k. Zool. bot. Ges., xxix, p. 599.

1892. „ *Id.*, Das System, p. 150.

1906. „ MacFarland, Bull. Bur. Fish., xxv, p. 141.

Body not depressed, more or less tuberculate. Frontal margin with digitiform processes. Rhinophores scarcely retractile, club perfoliate. Branchiae few (7 to 9), simply pinnate, flanked on either side by a large digitiform process. Tentacles short, lobe-like.

Mandibles with a wing-like process above. Radula not very narrow, no central, laterals consisting of 2 large unequal hamate teeth within, and 4 simple plate-like teeth on outer side. Penis armed.

Polycera nigrocrocea n. sp.

(Plate XIX, figs. 7, 8.)

Form similar to *P. quadrilineata* (O. F. Müller). Body smooth, not tuberculate. Frontal margin with 6 processes, of which the hindmost is bifid. Gills 9 (or 10). Mandibles normal. Radula very similar to that of the northern species, but the two hamate laterals are stouter, the distal limb of the hook shorter, than in *quadrilineata* as figured by Alder and Hancock (1864) and Bergh (1879).

Length.—Reaching 60 mm. or even occasionally 70 mm.

Colour.—White, rather dirty, with 3 longitudinal black stripes, one medio-dorsal from between the rhinophores to the gills, continued for a short distance posterior to the gills, and one on each side from below the posterior frontal process to behind the gills, where it breaks up into a number of irregular black or grey spots. Rhinophores and

bases of gills black. Frontal processes, apices of gills and flanking processes clear yellow. Sometimes also a posterior medio-dorsal yellow stripe on the tail.

Locality.—False Bay and Table Bay, low tide (St. James and Kalk Bay, February, March, May, October 1912, K.H.B.; March 1901, W. F. Purcell; Cape Town Docks, March 1922).

This species is clearly distinct from the northern Atlantic and Mediterranean species, *P. quadrilineata*, and the Californian *P. atra*, in the bifid posterior frontal process, the smooth body, and the coloration.

With regard to the latter feature, *quadrilineata* varies considerably, and it is to be expected that specimens of the Cape species will be found differing more or less markedly from the normal as here described and figured.

Gen. PALIO Gray.

1857. *Palio*. Gray, Guide Brit. Moll. Br. Mus., i, p. 213.

1879. „ Bergh, Verh. k.k. Zool. bot. Ges., xxix, p. 601.

1892. „ Bergh, Das System, p. 150.

Body not depressed, more or less tuberculate. Frontal margin crenulate or with short digitiform processes. Rhinophores scarcely retractile, club perfoliate. Branchiae few, bi- or tri-pinnate, flanked by one or more processes. Dorso-lateral margins crenulate.

Mandibles without wing-like expansion. Radula resembling that of *Polycera*.

**Palio capensis* (Q. and G.).

1824. *Polycera capensis*. Quoy and Gaimard, Voy. de l'Ur. Zool., p. 417, pl. lxvi, fig. 4 (Cape seas).

1892. *Palio* „ Bergh, *loc. cit.*, p. 150 (species dubia).

1903. *Palio* (?) „ Smith, Tr. Malac. Soc., v, p. 357.

This species has not yet been rediscovered.

Gen. TRIOPA Johnston.

1838. *Triopa*. Johnston, Zool. Miscell., i, p. 123.

1880. „ Bergh, Verh. k.k. bot. Zool. Ges., xxx, p. 638.

1892. „ *Id.*, Das System, 147.

1907. „ *Id.*, Mar. Invest. S.A., v, p. 65.

Body not very depressed. Frontal and dorso-lateral margins set with clavate processes. Rhinophores retractile, claws perfoliate. Branchiae 3 or 5, tripinnate. Tentacles short, canaliculate.

Mandibles absent. Radula narrow, no central tooth, first two laterals large (the outer larger than inner) and hamate, the rest small and quadrangular. Penis armed with a series of hooks.

Triopa lucida Stimpson.

(Plate XIX, fig. 2.)

1856. *Triopa lucida*. Stimpson, Pr. Ac. Nat. Sci. Philad., vii, p. 388 (Simon's Bay).

1907. „ „ Bergh, *loc. cit.*, p. 66, pl. xii, figs. 6-7 (dorsal process and radula), off Tugela River.

A single dried specimen (Kalk Bay, 3/2/04) appears to be this species. It has, however, 5 distinct branchiae, whereas the specimen examined by Bergh had only 3. Unfortunately the specimen seems to have been mutilated about the mouth, for the bulbus pharyngeus, and consequently the radula, could not be found.

Two specimens from Gordon's Bay (24/9/22, K.H.B.) both have 5 gills, which seems to show that this is the normal number in this species, and that either Bergh miscounted the gills in his Natal specimen or that it should have been referred to another species.

Length.—Up to 16-17 mm.

Colour.—White, an irregular series of orange spots along each side and down the middle of the back from the rhinophores to the gills, tips of clavate processes, the clavus of the rhinophores and the gills also orange.

Bergh states that his specimen was procured off the mouth of the Tugela River, but that it was found (so his words would seem to imply) together with *Idialiella amoenula*, which was found at Gordon's Bay. In view of the fact that Stimpson's specimen was from Simon's Bay, the above-mentioned dry specimen from Kalk Bay, and my specimens from Gordon's Bay—all three localities in False Bay—the Natal locality must be looked upon as doubtful, unless Bergh's specimen should be referred to another species.

Gen. KALINGA Ald. and Hanc.

1864. *Kalinga*. Alder and Hancock, Tr. Zool. Soc., v, p. 134.

1892. „ Bergh, Das System, p. 134.

1907. „ *Id.*, Mar. Invest. S.A., v, p. 74.

Body large, oval, depressed. Frontal margin with numerous papilligerous processes, dorso-lateral margins with similar but fewer

processes. Rhinophores retractile, club perfoliate. Branchiae few (5), large, separate, quadripinnate. Foot broader than back. Sides and back tuberculate.

Mandibles absent. Radula with a large number of uniform, small, tricuspid teeth. Penis armed.

**Kalinga ornata* A. and H.

1864. *Kalinga ornata*. Alder and Hancock, *loc. cit.*, p. 135, pl. xxxii, figs. 7-10 (coloured figures).
 1905. „ „ Farran in Herdman's Ceylon Pearl Fish. Suppl. Rep., xxi, p. 347, pl. iii, figs. 23, 24 (radula).
 1906. „ „ Eliot, Proc. Zool. Soc. Lond., ii, p. 670, pl. xlvii, fig. 2 (animal).
 1907. „ „ Bergh, *loc. cit.*, p. 75, pl. xiii, figs. 1-5 (anatomy and radula).

A large ornate species. Light flesh or light brown when alive, tubercles, rhinophores, tips of gills crimson.

Locality.—Zululand coast.

Distribution.—Indian seas.

Gen. EUPLOCAMUS Phil.

1836. *Euplocamus*. Philippi, Enum. Moll. Sci., i, p. 103.
 1879. „ „ Bergh, Verh. k. k. bot. Zool. Ges., xxix, p. 623.
 1892. „ „ Bergh, Das System, p. 153.
 1907. „ „ *Id.*, Mar. Invest. S.A., v, p. 70.

Body somewhat elongate. Frontal and dorso-lateral margins with arborescent processes. Rhinophores retractile, club elongate, perfoliate. Branchiae few (5), tripinnate. Tentacles auriform. Foot broad.

Mandibles strong. Radula rather broad, no central tooth, 2 or 3 inner laterals large and strongly hamate, outer laterals (5 to 35) simple, quadrangular. Penis armed.

**Euplocamus croceus* Phil.

1836. *Euplocamus croceus*. Philippi, *loc. cit.*, p. 103.
 1879. „ „ Bergh, *loc. cit.*, p. 625, pl. xi, figs. 9-12, pl. xii, figs. 7-17, pl. xiii, figs. 1-16, pl. xiv, figs. 1, 2 (anatomy, radula).

1907. *Euplocamus croceus*, var. *capensis*. Bergh, *loc. cit.*, p. 71, pl. xii, figs. 18-24 (head, anatomy, radula).

1923. „ „ Odhner, Göteborg. Vet. Handl., xxvi.

1926. „ „ Tomlin, Ann. Nat. Mus., v, p. 286.

Yellowish or greenish, with small red spots.

Locality.—Agulhas Bank.

Distribution.—Mediterranean.

Gen. PLOCAMOPHERUS Leuck.

1828. *Plocamopherus*. Leuckart, Rüppel's Ak. Reise N. Afrika, p. 17.

1866. „ Alder and Hancock, Tr. Zool. Soc., v, p. 132.

1879. „ Bergh, Verh. k. k. Zool. bot. Ges., xxix, p. 639.

1883. „ *Id.*, *ibid.*, xxxiii, p. 144.

1892. „ *Id.*, Das System, p. 154.

Body elongate. Frontal margin well-developed with ramose appendages. Lateral margin marked by ramose, usually apically tuberculate, processes. Rhinophores retractile, club perfoliate. Tentacles large, lamellate. Branchiae few (5) tripinnate. Foot not very narrow, grooved anteriorly. Tail crested.

Mandibles fairly strong. Radula rather broad, no central but a wide striated "false plate," laterals numerous, the inner ones hamate, the outer simple, plate-like. Prostate large, penis armed.

Plocamopherus apheles n. sp.

(Text-fig. 1.)

Form as usual. The frontal margin with very small and feebly branched (or unbranched) processes. The 3 lateral processes in the



FIG. 1.—*Plocamopherus apheles* n. sp. Nat. size.

positions described by Bergh for *P. imperialis*, *i.e.* shortly behind the rhinophores, in front of and behind the gills, the 1st and 2nd subequal, finely granulate, the 3rd with a conical tuberculate "head."

Appendages on the sides almost obsolete. Tail crenulate but apparently without processes. Rhinophore sheaths low, stalk scarcely higher than sheath (in the preserved specimen), club set obliquely on stalk projecting in front as well as behind (somewhat like a mushroom).

Radula as usual, about 7 hamate and 10 simple plate-like laterals.

Length.—60 mm., height about 15 mm.

Colour.—The specimen as preserved is dirty greyish, but still shows faint green speckles on the upper and lower surfaces of the frontal veil.

Locality.—Nahoon Estuary, East London (31/5/01, Dr. Gilchrist).

This form may prove, when more specimens have been collected and their colours in life noted, to be only a smooth variety of one of the already described species.

Gen. NEMBROTHA Bgh.

1877. Bergh, *Malac. Unters.*, xi, p. 450.

1881. *Id.*, *Beitr.*, ii, p. 658.

1892. *Id.*, *Das System*, p. 152.

1904. Eliot, *P.Z.S.*, II, i, p. 89.

1905. Bergh, *Siboga Exp.*, *Monogr.* 50, p. 193.

1907. *Id.*, *Mar. Invest. S.A.*, v, p. 67.

1908. Eliot, *J. Linn. Soc. Lond.*, xxxi, p. 98.

1924. O'Donoghue, *ibid.*, xxxv, p. 567.

Body limaciform, almost smooth. Rhinophores retractile, clavus perfoliate. Branchiae nearly in the middle of the back, paucifoliate (3 to 5), bi- or tri-pinnate. Tentacles short, lobate. Foot narrow.

Mandibles, none, or very feeble. Radula narrow, median tooth quadrangular, laterals falciform, the outermost simple and quadrangular. Penis armed with hooks.

Nembrotha capensis Bgh.

(Plate XIX, fig. 10.)

1907. *Nembrotha capensis*. Bergh, *loc. cit.*, p. 68, pl. xii, figs. 8–17 (anatomy and radula).

Brownish-black, with two thin light green lines along the back, joining (anteriorly) in front of the rhinophores, and (posteriorly) in a sharp angle halfway between gills and end of tail, a small triangular space outlined by similar lines near the end of tail. Foot sole bluish. Gills with the axes black, the finer branches blue.

Locality.—St. James and Kalk Bay, low tide (False Bay).

This species may be the same as *morosa* Bgh. (1877, Malac. Unters., p. 457, pl. xxv, fig. 9, coloured fig. of animal as *Trevelyana morosa*, and pl. xxxiii, fig. 7, gills) from the Philippine Islands.

FAMILY OKENIIDAE.

1892. Bergh, Das System, p. 155 (*Goniodorididae*).

1923. Iredale and O'Donoghue, Proc. Mal. Soc., xv, p. 217.

Body more or less depressed, with strong margin separating back and sides. Gills usually many. Foot usually broad. A suctorial apparatus in addition to labial armature and radula.

Gen. IDALIELLA Bgh.

1881. Bergh, Wieg. Arch. f. Naturg., xlvii, p. 145.

1883. *Id.*, Verh. k. k. bot. Zool. Ges. Wien, xxxiii, p. 174.

1892. *Id.*, Das System, p. 164.

1907. *Id.*, Mar. Invest. S.A., p. 80.

Body not depressed. Dorso-lateral margin continuous all round, cirriferous. Back without cirri. Rhinophores not retractile, club perfoliate. Gills simply pinnate, distinct from one another. Foot large, with short tail. Mandibles present. Radula narrow, no central, 1st lateral strong, hooked, outer lateral a simple plate. Penis armed.

Idaliella differs from *Okenia* Menke (syn.: *Idalia* Leuck., non-Hübner) in not having cirri on the back, and in having mandibles instead of series of small hooks.

**Idaliella amoenula* Bgh.

1907. *Idaliella amoenula*. Bergh, *loc. cit.*, p. 80, pl. xiii, figs. 6–11 (coloured fig., radula, and anatomy).

Locality.—Gordon's Bay, low tide (False Bay).

B. ZONABRANCHIATA.

1923. Iredale and O'Donoghue, Proc. Mal. Soc., xv, p. 229 (*Zonabanchiatae*).

Body quadrangular in cross section. Frontal velum more or less bilobed, bearing papilliform or digitiform processes, the external

angle developed into a spoon-like tentacle. Rhinophores, sheath tubular with reverted margin, club simple surrounded by pinnae, retractile into the sheath. Dorso-lateral margin with (or without *Tritonidoxa*) more or less ramose branchial tufts. Vent lateral. Foot broad. Mandibles strong, radula multiseriate, median tooth tridentate, first lateral blunt, others hamate. Liver compact, not ramose.

In certain characters somewhat intermediate between the *Holohepatica* and *Kladohepatica*.

Sluggish animals, feeding on Aleyonarians, etc., and distributed over nearly the whole world, except perhaps the tropics. Spawn a long, much convoluted, gelatinous cord.

FAMILY DUVAUCELIIDAE.

1892. Bergh, Das System, p. 74 (*Tritoniadae*).
 1906. Vayssi  re, Bull. Mus. Paris, xii, p. 148.
 1907. Bergh, Mar. Invest. S.A., v, p. 82 (*Tritoniidae*).
 1907. Eliot, Nat. Antaret. Exp., ii, p. 3.
 1912. Thiele, Deutsche S  dpol. Exp., xiii.
 1923. Iredale and O'Donoghue, *loc. cit.*, p. 229 (*Duvauceliidae*).
 With the characters given above.

Gen. MARIONIA Vayss.

1877. Vayssi  re, C.R., lxxxv, p. 299.
 1892. Bergh, Das System, p. 77.
 1904. Eliot, P.Z.S., II, i, p. 93.

Frontal veil, with usually numerous digitiform processes. Ventricle armed with spines. With branchial tufts.

**Marionia arborescens* Bergh.

1890. *Marionia arborescens*. Bergh, Malac. Unters., xvii, p. 891,
 pl. lxxxviii, figs. 31-39 (anatomy).
 1910. ,, ,, Eliot, Ann. Nat. Mus., ii, p. 222.

Locality.—Port Shepstone, Natal.

Distribution.—Philippines, East Indies, Red Sea, and east coast of Africa.

Eliot (1908, J. Linn. Soc. Lond., xxxi, p. 122) mentions the possibility of this species being synonymous with the Red Sea species, *Cyanobranchiata* R  pp. and Leuck., 1828.

Gen. SPHAEROSTOMA MacG.

1798. *Tritonia*. Cuvier, Table, Elem. Hist. Nat., p. 387 (no species mentioned).
 1803. „ „ *Id.*, Ann. Mus. d'Hist. Nat. Paris, i, p. 483.
 1843. *Sphaerostoma*. MacGillivray, Hist. Moll. Anim. Aberd., p. 335.
 1892. *Tritonia*. Bergh, Das System, p. 76.
 1894. „ „ *Id.*, Bull. Mus. Comp. Zool., xxv, p. 146.
 1905. „ „ *Id.*, Siboga Exp., Monogr. 50, p. 203.
 1907. „ „ *Id.*, Mar. Invest. S.A., v, p. 82.
 1923. *Sphaerostoma*. Iredale and O'Donoghue, Proc. Mal. Soc., xv, p. 229.

The name *Tritonia* has been discarded because Cuvier, in his diagnosis of the genus in 1798, mentioned no particular species, and although in 1803 he specified *T. hombergi*, Meigen had in the meantime (1800) used the name *Tritonia* for a genus of *Diptera*.

Ventricle unarmed. Frontal veil papilligerous. Radula with numerous laterals. With branchial tufts.

Sphaerostoma aurantiacum n. sp.

(Plate XIX, fig. 1.)

Frontal veil with 3 digitiform processes on either side. Six gills along each side of back. Deep orange, the gills rather paler. 25 mm.

Locality.—Strandfontein, False Bay, on *Melitodes* coral, with spawn (22/2/12, K.H.B.).

Sphaerostoma pallidum (Stimpson).

1854. *Tritonia pallida*. Stimpson, Pr. Ac. Nat. Sci. Philad., vii, p. 388.
 1905. „ „ „ Eliot, Tr. Roy. Soc. Edin., xli, 3, p. 528, figs. 11–14 (veil and radula), (the text-figs. are labelled *Tritonia antarctica*).
 1907. „ „ „ Bergh, Mar. Invest. S.A., v, p. 83, pl. xiii, figs. 12–15, pl. xiv, fig. 1 (mandible and radula).
 1909. „ „ „ Eliot, Scott. Nat. Ant. Exp., v, p. 20, figs. 11–14 (a reprint of the 1905 paper).

“ One inch long, of transparent white colour, with a few flake-white spots on the back, the filaments around the truncated extremity

of the sheaths of the tentacles of a dark brownish colour ; a white line extends below and parallel to the branchiae on the sides of the body " (Stimpson).

Frontal veil with 4 digitiform processes on either side. 12 to 17 gills along each side of back.

Locality.—Cape Morgan to Saldanha Bay, 30 to 40 fathoms.

**Sphaerostoma indecorum* (Bgh.).

1907. *Tritonia indecora*. Bergh, Mar. Invest. S.A., v, p. 85, pl. xiii, fig. 16, pl. xiv, figs. 2, 3 (radula).

Pinkish. Frontal veil with 11 to 12 processes on either side. 5 to 8 gills along each side of back.

Locality.—Off Cape Point.

Gen. TRITONIDOKA Bgh.

1907. *Tritonidoka*. Bergh, Mar. Invest. S.A., v, p. 86.

1906. „ *Id.*, Zool. Jahrb., xxiii, 6, p. 740.

In all respects like *Sphaerostoma*, but without branchial tufts.

**Tritonidoka capensis* Bgh.

1907. *Tritonidoka capensis*. Bergh, *loc. cit.*, p. 87, pl. viii, figs. 8 to 13 (frontal veil, mandible, radula, and penis).

Uniform white.

Locality.—Off Glendower Beacon, 66 fathoms.

C. KLADOHEPATICA.

1881. Bergh, Verh. k. k. Zool. bot. Ges. Wien, xxx, p. 236.

1890. *Id.*, Zool. Jahrb. Abt. Syst., v.

1892. *Id.*, Das System, p. 7.

Gills more or less numerous, in the form of elongate-conical, arborescent or foliaceous processes (papillae cerata) of the skin, situate dorsally or dorso-laterally, rarely laterally. Mandibles present. Liver sending off branches into the gills. A single vesicula seminalis.

The forms in this group are known collectively as "Aeolids." They are found in all parts of the world, but, contrary to the Dorids, they are more numerous in the extra-tropical regions.

Representatives of six families are found in South Africa : *Aeolidiidae* (comprising several subfamilies), *Tethymelibidae*, *Iduliidae*, *Scyllaeidae*, and *Arminidae*, which may be distinguished by means of the following synopsis :—

Limaciform. Papillae usually in several dorsal series	<i>Aeolidiidae</i> .
Head developed into a large cowl	<i>Tethymelibidae</i> .
Limaciform. Papillae in a single series, nodose	<i>Dotonidae</i> .
Compressed. Two pairs of dorsal processes with gill tufts on inner surfaces	<i>Scyllaeidae</i> .
Gill lamellae lateral	<i>Arminidae</i> .

FAMILY AEOLIDIIDAE.

SUB-FAMILY AEOLIDIINAE.

1892. Bergh, Das System, p. 26.

Body depressed or subdepressed. Papillae more or less compressed. Margin of mandibles smooth, radula uniseriate, broad, pectinate. Penis unarmed.

Gen. AEOLIDIELLA Bgh.

- 1874. *Aeolidiella*. Bergh, Beitr., ii, p. 396.
- 1881. „ Trinchese, Aelididae, ii, p. 23.
- 1888. „ Bergh, Malac. Unters., p. 781.
- 1892. „ *Id.*, Das System, p. 27.
- 1905. „ *Id.*, Siboga Exp., Monogr. 50, p. 222.
- 1913. „ Eliot, J. Coll. Sci. Tokyo, xxxv.

Rhinophores simple with a spiral groove. Teeth emarginate in the middle.

Aeolidiella saldanhensis n. sp.

(Text-figs. 2 and 3.)

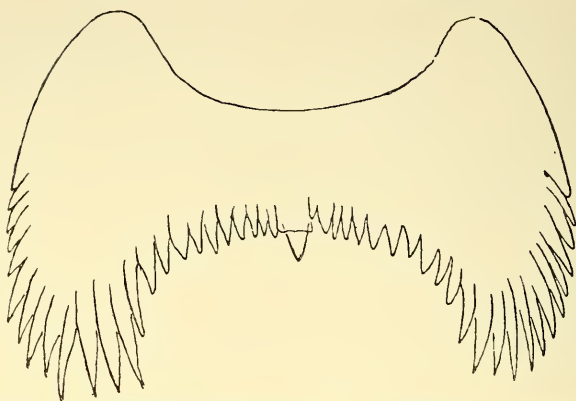
Saldanha Bay, low tide (s.s. “ Pieter Faure ” coll.). Largest specimen 20 mm. in length.



FIG. 2.—*Aeolidiella saldanhensis* n. sp. $\times 1\frac{1}{2}$.

Colour in life ?.

Radula : ca. 24 teeth, widely emarginate, with prominent central cusp (text-fig. 3). Antero-lateral angles of foot rounded.

FIG. 3.—*Aeolidiella saldanhensis* n. sp. Radula tooth. $\times 150$.

SUB-FAMILY CRATENINAE.

1892. Bergh, Das System, p. 29.

Body slender. Rhinophores simple. Papillae subcylindrical. Mandible with one or more series of denticles. Radula uniseriate, teeth angular, with a strong central cusp flanked with denticles. Penis unarmed.

Gen. *HERVIA* Bgh.1875. *Hervia*. Bergh, Beitr. Aeoliden, ii, p. 409.1879. *Rizzolia*. Trinchese, Rend. Acc. Bologn, p. 1.

1881. „ Bergh, Verh. k. k. Zool. bot. Ges. Wien, xxxi, p. 156.

1884. „ *Id.*, "Challenger" Rep., x, p. 27.1888. *Hervia*. *Id.*, Beitr. Aeoliden, ix, p. 676.1892. „ *Id.*, loc. cit., p. 31.1904. „ Eliot, Proc. Zool. Soc. Lond., ii, 2, p. 286 (*Rizzolia*, a synonym).

1905. „ Farran in Herdman's Ceylon Pearl Fish. Suppl. Rep., xxi, p. 331.

1905. „ Bergh, Siboga Exp., Monogr. 50, p. 231 (*Rizzolia* queried as a synonym).

1906. „ Eliot, Proc. Zool. Soc. Lond., p. 1007.

Antero-lateral angles of foot produced, tentaculiform. Margin of mandible with a single series of denticles.

If *Rizzolia* be a synonym of *Hervia*, the genus will contain two species with the name "*modesta* Bgh."

Hervia quadricolor n. sp.

(Plate XX, figs. 9, 10.)

Body slender with long tapering tail, which is dorsally keeled. Tentacles long and slender. Rhinophores also slender, simple in life, but wrinkled and seemingly annulate in the preserved specimen. Papillae fusiform in 5 groups, about 30 to 40 in the first, 30 in the second, 25 in the third, 20 in the fourth, and 12 to 15 in the fifth, the outer ones short, the innermost longest (5 to 6 mm. in the preserved state). Genital orifice immediately below the first, and the anal papilla in the middle of the second group on the right side. Antero-lateral angles of foot produced, tentaculiform.

Mandibles with about 45 denticulations on the masticatory edge, some of them bifid, and with secondary denticles. Radula with 26 teeth, angularly horseshoe-shaped, with strong central cusp flanked with 3 (occasionally 4) denticles.

Length.—3.5 cm., of which the tail measures 1.5 cm.

Colour.—Head pale orange above, with 2 white streaks from the tentacles to the bases of the rhinophores; tentacles and rhinophores same colour as head, with the tips sulphur yellow. Rest of body translucent white, the tail with a narrow median stripe of orange bordered by opaque (faintly blue) white, stomach and intestines showing through the skin a dull blue. Papillae dark brown with a purplish tinge, towards the end a band of bright orange and one of ultramarine blue separated by a narrow band of dark brown, apex sulphur yellow, the ground colour is also sprinkled lightly with sulphur-yellow dots just below the orange band.

Locality.—St. James, False Bay (20/6/12, K.H.B.).

When the animal is disturbed the tentacles and rhinophores are contracted, and simultaneously the papillae are extended and pointed in all directions like a bristling porcupine. Alder and Hancock (Brit. Nudibr. Moll.) describe a similar action in the case of a *Facelina coronata* (Forbes) about to attack and devour one of its fellows.

The agreement in the mandibles and radula between this species and *Rizzolia australis* Bgh. ("Challenger" Rep., x, p. 27, pl. ix, figs. 1-5) from Australia is very close. Bergh thinks that perhaps the bifid nature of the denticles on the mandible may be of specific value in recognising this species, but similar bifid denticles have been noted in *H. militaris* by Eliot (1906, Proc. Zool. Soc. Lond., p. 1008), and in *H. rosea* Bgh.

Since, however, the colours of the living animal of *R. australis* were

not noted, and the species has not been again found, it seems preferable to give the Cape species a distinctive name.

Gen. CRATENA Bgh.

1885. *Cratena*. Bergh, Beitr. Aeolid, viii (Verh. Zool. bot. Ges., xxxv), p. 27.
 1892. „ *Id.*, Das System, p. 30.
 1905. „ *Id.*, Siboga Exp., Monogr. 50, p. 230.
 1916. *Cuthona*. Eliot, Mem. Ind. Mus., v, 4, p. 378. *Cratena* regarded as syn. with *Cuthona*, which is older.
 See also 1906, Eliot, p. 129.

Antero-lateral angles of foot slightly produced, anterior margin gently arcuate.

Margin of mandible with a single series of denticles.

Cratena capensis n. sp.

(Plate XX, fig. 8.)

Body slender, tail moderately long, tapering. Tentacles and rhinophores moderately long, the latter simple. Papillae fusiform, in 8 to 9 groups, about 12 in 1st, 7 in 2nd and 3rd, 5 in 4th and 5th, 4 in 6th, and 2 in 7th and 8th. Genital immediately below 1st group on right side, anal papilla behind 2nd right-hand group. Antero-lateral angles of foot very slightly produced, rounded.

Mandibles with numerous (50 or more) fine denticulations on the masticatory edge. Radula with about 15 teeth, the teeth horseshoe-shaped, with a very strong and prominent central cusp flanked by 6 (5 to 7) slender denticles.

Length.—12 to 15 mm.

Colour.—Body translucent white, a faint orange tint between the bases of the rhinophores and tentacles, due to the mandibles showing through; rhinophores and tentacles white, the black eyes showing through at the base of the former; papillae indian red with white apices.

Locality.—St. James, and other places on east shore of Cape Peninsula; Sea Point, Table Bay; low tide (March, April, May, July, November, 1912-13, K.H.B.).

SUB-FAMILY FACELININAE.

1892. Bergh, Das System, p. 39.

Body slender. Rhinophores perfoliate or annulate. Tentacles elongate. Antero-lateral angles of foot produced in a tentaculiform

process. Mandible with margin denticulate. Radula uniseriate, a strong central tooth flanked by smaller denticles. Penis armed with numerous spines arranged around the margin of a foliaceous expansion.

Gen. *FACELINA* A. and H.

1855. Alder and Hancock, Brit. Nudibr. Moll., vii, App., p. xxii.

1881. Trinchese, Aeolididae, ii, p. 31.

1892. Bergh, *loc. cit.*, p. 40.

1904. Eliot, Proc. Zool. Soc. Lond., ii, 2, p. 288.

1923. Iredale and O'Donoghue, Proc. Mal. Soc., xv, p. 205.

Facelina faurei n. sp.

(Text-figs. 4 and 5.)

Locality.—Off Saldanha Bay, 33 fathoms; Dassen Island, 6/4/98, low tide (s.s. "Pieter Faure" coll.).



FIG. 4.—*Facelina faurei* n. sp. Nat. size.

Length.—Up to 25 mm.

Papillae thickly bunched on anterior third of body, behind which is very large penial lamina.

Papillae on hinder part not distinctly grouped.

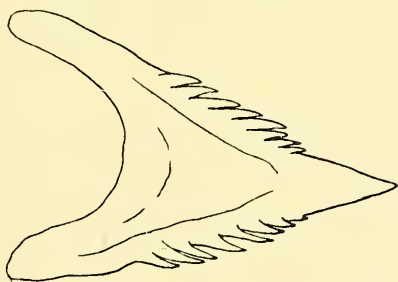


FIG. 5.—*Facelina faurei* n. sp. Radula tooth. $\times 150$.

Radula with 8 to 9 denticles on either side of the prominent central cusp. 20 to 24 denticles on mandible.

Rhinophores annulate. Colour not noted.

SUB-FAMILY GLAUCINAE.

1892. Bergh, Das System, p. 43.

Body stout. Elongate papillae arising in 3 bunches along sides of body. Rhinophores simple, short. Foot truncated in front. Mandibles strong, radula uniseriate. Pelagic.

Gen. GLAUCUS Forster.

1892. Bergh, *loc. cit.*, p. 43.

With the characters of the family.

Glaucus atlanticus Forster.

(Plate XX, fig. 2.)

1890. Bergh, Malac. Unters., Hft. xvii, p. 876.

1899. *Id.*, Res. Sci. Camp. Monaco., fasc. 14, p. 4, pl. ii, figs. 11, 12 (coloured fig. and spawn).

1907. *Id.*, Mar. Invest. S.A., v, p. 94.

Frequently thrown up on the beach in False Bay and Table Bay, chiefly after south-east winds in summer.

Widely distributed. Floats back downwards on the surface of the sea, and feeds on the pelagic Gastropod *Janthina*.

Spawn: a number of hyalin tubes, 4 to 6 mm. long and 0.1 mm. wide, containing 20 to 25 eggs (Bergh, 1899, *loc. cit.*).

SUB-FAMILY ZEPHYRININAE.

1892. Bergh, Das System, p. 44 (*Janidae*).

1907. *Id.*, Mar. Invest. S.A., v, p. 88 (*Janidae*).

1923. Iredale and O'Donoghue, Proc. Mal. Soc., xv, p. 213 (*Zephyrinidae*).

Body not depressed, dorsal margin with thickly set papillae. Vent medio-dorsal (except *Madrella*) far back. Rhinophores usually perfoliate. Antero-lateral angles of foot not prominent. Mandibles very strong, radula multiserial (except *Madrella*), median and lateral teeth elongate, not denticulate.

Gen. JANOLUS Bgh.

1884. Bergh, "Challenger" Rep., x, p. 18.

1904. *Id.*, Malac. Unters., vi, 1, p. 6.

1923. Iredale and O'Donoghue, *loc. cit.*, p. 213 (synonymy).

Rhinophores perfoliate, with inter-rhinophoral crest. Anal papilla medio-dorsal. Margin of mandibles not dentate.

Janolus capensis Bgh.

(Plate XX, figs. 6, 7.)

1907. *Janolus capensis*. Bergh, *loc. cit.*, p. 90, pl. vii, figs. 6-21 (anatomy), False Bay, 17-30 fms.

Common at St. James and other localities on the east coast of Cape Peninsula at low tide, reaching 40 mm. in length.

The colour varies. As a rule the cerata are indian (brick) red, but occasionally they are slate-grey; the rest of the animal white. Another specimen (Buffels Bay, 1/3/15) was pale blue, the cerata tipped with white, tail edged with pale blue, and a darker blue median stripe.

FAMILY TETHYMELIBIDAE.

1892. Bergh, *Das System*, p. 47.

Dorsal papillae exceedingly large. Head produced forwards, cowl-like, its margin cirriferous. Rhinophores with contractile sheath and perfoliate club. Radula and often also mandibles wanting. With or without gills at base of papillae.

Locality.—Warm and tropical seas.

Gen. MELIBE Rang.

1829. *Melibe*. Rang, *Man. des Moll.*, p. 129, pl. iii, fig. 3.

1907. „ Bergh, *Mar. Invest. S.A.*, v, p. 95 (references).

Foot narrow, body somewhat compressed. Mandibles present. No gills.

Melibe rosea Rang.

(Plate XX, fig. 1.)

1829. *Melibe rosea*. Rang, *loc. cit.*, p. 129, pl. iii, fig. 3.

1907. „ „ Bergh, *loc. cit.*, p. 96, pl. ix, figs. 1-12 (anatomical details).

Locality.—Very common along the shores of the Peninsula in Table Bay and False Bay, reaching a length of 40 mm.

Spawns in August; a spirally-coiled, flat, upstanding ribbon, salmon in colour, attached to rocks, weed, etc.

FAMILY IDULIIDAE.

1892. Bergh, Das System, p. 52 (*Dotonidae*).

1923. Iredale and O'Donoghue, Proc. Mal. Soc., xv, p. 210.

Body similar to that of the *Aeolididae*. Rhinophores consisting of a simple club inserted on a retractile, apically repandate sheath. Papillae in a single row on each side, very caducous, inflated, tuberculate, or nodose. Mandibles with smooth margin. Radula uniseriate (as a rule). Penis unarmed.

Gen. *IDULIA* Leach.

1815. *Doto*. Oken, Lehrbuch d. Zool., i, p. 278 (not *Doto* Oken, 1807).

1852. *Idulia*. Leach, Syn. Moll. Brit., p. 25.

1879. *Doto*. Bergh, Beitr. Aeolid, vi, p. 574.

1881. „ Trinchese, Aeolididae, ii, p. 89.

1888. „ Bergh, *ibid.*, ix, p. 693.

1892. „ *Id.*, *loc. cit.*, p. 54.

1905. „ *Id.*, Siboga Exp., Monogr. 50, p. 221.

1918. *Dotona*. Iredale, Proc. Mal. Soc., xiii, p. 30.

1923. *Idulia*. Iredale and O'Donoghue, *ibid.*, xv, p. 210.

Radula uniseriate. Papillae typical (tuberculate or nodose).

Idulia cinerea Trinchese.

(Plate XX, fig. 5.)

1881. *Doto cinerea*. Trinchese, *loc. cit.*, p. 92, pl. lv, fig. 1 (coloured fig.).

Six papillae (occasionally a small seventh one) along each side, set with rounded tubercles.

Length.—Up to 14 mm.

Colour.—Lower part of body dirty white, upper parts speckled and marbled with grey-brown, posterior margin of rhinophores (sheath and club) similarly speckled, papillae grey-brown with the tubercles white-tipped.

Locality.—St. James, False Bay; April 1912, spawning on Hydroids (K.H.B.); common.

These specimens seem to be assignable to *cinerea* Trin., with the coloured figure of which they agree. Trinchese's figure shows only 5 papillae on the right and 6 on the left, but the number of papillae

cannot be regarded as constant enough for specific distinctions, since the Cape specimens frequently possess a seventh pair of small papillae at the tail end in addition to the normal six pairs.

Distribution.—Mediterranean, Great Britain.

Idulia splendida Trinch.

(Plate XX, fig. 4.)

1881. *Doto splendida*. Trinchese, *loc. cit.*, p. 93, pl. lvi (coloured fig.).

A specimen of another species was found at Sea Point, Table Bay (29/11/13, K.H.B., low tide). It resembles the preceding specimens except that the papillae are plumper, and the tips of the tubercles are black with a faint white ring. There are 7 papillae on the left side, 6 on the right.

It agrees well with Trinchese's figure of *splendida* from the Mediterranean.

Bergh (1892, *loc. cit.*, p. 55) makes *pinnatifida* Mtg. synonymous with *splendida*, but with a query. If this should prove to be the case, then *pinnatifida* has precedence.

FAMILY SCYLLAEIDAE.

1892. Bergh, *Das System*, p. 62.

1902. Eliot, *Proc. Zool. Soc. Lond.*, ii, p. 64.

1906. *Id.*, *ibid.*, ii, p. 674.

1908. *Id.*, *J. Linn. Soc. Lond.*, xxxi, p. 90.

Body compressed. The back with one or two lobe-like projections bearing small ramose branchial tufts on their inner surfaces. Vent lateral, about the middle of the body. Frontal velum small or absent. Rhinophores large, lobe-like, with small perfoliate clubs in the cup-like apices of the stalks. Tail short, more or less crest-like. Foot narrow. Mandibles strong, radula multiseriate, with denticulate median and lateral teeth.

Cosmopolitan in tropical and sub-tropical waters, crawling on seaweeds and floating Sargassum, and feeding chiefly on Hydroids.

Eliot (*loc. cit.*, 1902 and 1908) discusses the question whether *Crosslandia* should be kept distinct from *Scyllaea*, and is of opinion that the differences are of doubtful generic value.

In support of the view that they should be kept distinct, I may draw attention to the difference in the shape of the spawn, which in *Crosslandia* is said to resemble a string of beads. The spawn of the

South African specimens of *Seyllaea* shows no trace of a moniliform arrangement (see *infra*).

Gen. SCYLLAEA Linn.

1758. *Seyllaea*. Linné, Syst. Nat., ed. 10, p. 656.
 1864. „ Alder and Hancock, Tr. Zool. Soc., v, p. 136.
 1875. „ Bergh, Malac. Unters., viii, p. 315.
 1892. „ *Id.*, Das System, p. 64.
 1893. „ *Id.*, Res. Camp. Sci. Monaco, fasc. 4, p. 8.
 1905. „ *Id.*, Siboga Exp., Monogr. 50, p. 216.
 1905. „ Farran in Herdman's Ceylon Pearl Fish. Suppl. Rep., xxi, p. 333.
 1909. „ Eliot, Spol. Zeylan., vi, pt. 23, p. 81.

Body compressed, foot very narrow. Two pairs of large lobes dorso-laterally, bearing on their inner surfaces small ramose branchiae. Rhinophores large, lobe-like, bearing a small perfoliate club tentacle in the hollowed cup-like apex. Vent lateral, between the two dorsal lobes. Tail more or less raised into a crest. Mandibles strong, radula multiseriate, the teeth minutely denticulate.

Seyllaea pelagica Linn.

(Plate XX, fig. 3.)

1758. Linné, *loc. cit.*, p. 656.
 1875. Bergh, *loc. cit.*, p. 319, pl. xl, figs., pl. xlii, pl. xliii, pl. xlv, figs. 1-20, pl. xlv, figs. 6-18.
 1923. Iredale and O'Donoghue, Proc. Mal. Soc., xv, p. 214.

A species of this genus is common at St. James, Sea Point, and elsewhere along both shores of the Peninsula, and the "Pieter Faure" took some in St. Francis Bay. It clings to brown seaweeds, and can be found throughout the year, spawning in August and October. It reaches a length of 55 mm., or even 60 mm., but is highly contractile.

Colour.—Brown with fairly numerous, irregularly disposed emerald green spots along the sides.

The specimens are similar in general shape and structure to some specimens of *S. pelagica* taken in the Atlantic which I have examined. The upper parts of the body, however, are rather strongly verrucose (see Farran, 1905). The branchial tufts measure 5 mm. in length on a specimen 50 mm. long. The tail is not truncate, and the crest is moderately high.

The rhinophores are considerably stouter than in the specimens

of *S. pelagica*, more cylindrical, and less lobate and compressed. The posterior margin is more or less crested, the apex is grooved throughout, and forms a flat saucer when expanded, the margin of which is crenulate.

Anal papilla nearer the hind lobe.

As Bergh, 1905, is inclined to think, there seems to be only one widely distributed species with several colour variations. Farran, 1905, suggests that *marmorata* A. and H. is not distinct from *pelagica*.

Spawn, a long string arranged in a coil with upstanding loops, the top of each loop bending over towards the centre, pale yellowish in colour.

Other localities.—Off von Staden's River (St. Francis Bay), 32 fathoms.

FAMILY ARMINIDAE.

1892. Bergh, Das System, p. 68 (*Pleurophyllidiidae*).

1906. Eliot, Proc. Zool. Soc. Lond., p. 676 (*Pleurophyllidiidae*).

Body elongate or elongate-oval, somewhat depressed. Head large, with a lamella which is free behind and forms ear-like lobes laterally. Neck usually with a caruncle, behind which are the short retractile rhinophores. Back projecting laterally over the sides of the body, with raised longitudinal lines or pustules, and furnished with numbers of cnidocysts. Gills on the sides in front, followed by a series of lamellae, which reaches usually to the tail, but sometimes not so far. Genital pore under the right-hand gill, anal papilla further back on the same side.

Mandibles strong. Radula short and broad, with numerous laterals flanking the median tooth.

Mostly fairly large animals, brightly coloured.

Gen. ARMINA Raf.

(Text-fig. 6.)

1814. *Armina*. Rafinesque Schmaltz, Préc. découv. trav. Somiol., p. 30.

1816. *Pleurophyllidia*. Meckel in Hammer, Dis. Obs. Anat. Comp.

1866. „ Bergh, Naturh. Tidsskr., 3 R., 4 Bd., p. 207.

1880. „ *Id.*, Verh. k. k. Zool. bot. Ges., xxx, p. 172.

1890. „ *Id.*, Weitere Beitr. Pheuroph., Verh. k. k. Zool. bot. Ges., xl.

1892. „ *Id.*, loc. cit., p. 71.

1905. „ *Id.*, Siboga Exp., Monogr. 50, p. 213.

1907. „ *Id.*, Mar. Invest. S.A., v, p. 99.

1923. *Armina*. Iredale and O'Donoghue, Proc. Mal. Soc., xv, p. 217.

Body elongate. Caruncle distinct. Rhinophores contiguous.



FIG. 6.—*Armina* sp. to show general shape, gills, and lamellae.

Key to the South African Species.

- I. Masticatory margin of mandibles perfectly smooth. (Median plate with 10 denticles flanking central cusp) *capensis*.
- II. Masticatory margin of mandibles with minute conical denticles.
 1. Lateral teeth (except 1st) without denticles.
 - a. Median tooth greatly broader than long. *natalensis*.
 - b. Median tooth not greatly broader than long *euchroa*.
 2. Lateral teeth with denticles, except some of the outermost ones.
 - a. Central tooth flanked with 4 denticles *gilchristi*.
 - b. Central tooth flanked with 8–10 denticles *microdonta*.

Armina capensis (Bgh.).

1907. *Pleurophyllidia capensis*. Bergh, *loc. cit.*, p. 99, pl. viii, figs. 23, 24 (radula).

1910. „ „ Smith, Ann. Nat. Mus., ii, p. 182 (listed).

Locality.—Off East London, 37 to 39 fathoms.

Armina gilchristi (Bgh.).

1907. *Pleurophyllidia gilchristi*. Bergh, *loc. cit.*, p. 101, pl. viii, figs. 14–18 (mandible and radula).

1910. „ „ Smith, Ann. Nat. Mus., ii, p. 182 (listed).

Locality.—Agulhas Bank and Cape Point, 35 to 40 fathoms.

**Armina euchroa* (Bgh.).

1907. *Pleurophyllidia euchroa*. Bergh, *loc. cit.*, p. 102, pl. vii, figs. 1–5, pl. viii, fig. 25 (penis and radula).

1910. „ „ Smith, Ann. Nat. Mus., ii, p. 182 (listed).

Locality.—False Bay, 16 to 50 fathoms.

Armina microdonta (Bgh.).

1907. *Pleurophyllidia microdonta*. Bergh, *loc. cit.*, p. 103, pl. viii,
figs. 19–22 (radula).
1910. „ „ Smith, *Ann. Nat. Mus.*, ii, p. 182
(listed).

Locality.—Off Saldanha Bay, 33 fathoms.

**Armina natalensis* (Bgh.).

1848. *Diphyllidia lineata*. Krauss, *Südafrik. Moll.*, p. 35 (non
Otto).
1866. *Pleurophyllidia natalensis*. Bergh, *Naturh. Tidsskr.*, (3), iv,
p. 34, pl. vii.
1903. „ „ Smith, *Proc. Mal. Soc.*, v, p. 357
(listed).

Locality.—Natal coast.

NUDIBRANCHS FROM TRISTAN D'ACUNHA.

There are five specimens (collected by P. C. Keytel, 1909) moderately well preserved though considerably shrunken, owing, no doubt, to their having been placed direct in the preserving fluid without previous anaesthetising. No data as to coloration were made, and the specimens were presumably collected on the littoral at low tide.

Two specimens, about 16 mm. long, represent, perhaps, a species of *Discodorid*. The labial armature consists of very minute straight rods, and the radula teeth are hamate with a series of minute denticulations. The back appears to be quite smooth, the tentacles stout, conical, and grooved externally. The gills are about 6 to 7, tripinnate. In shape resembling a *Glossodoris*.

Another specimen, about 20 mm. long, is a “*Doris*,” but to what genus or species it should be assigned is doubtful. A rather distinct, though thin, transparent, and structureless, labial cuticle is present. The radula teeth are strongly hamate, without thickened bases. The mantle a good deal overlapping the foot, and densely covered with fine papillae. The rhinophore and branchial openings with even, though papillate, margins. Gills tripinnate. Tentacles apparently absent.

The other two specimens are large, about 65 mm. long by 45 mm. wide by 25 mm. high. The mantle is thick and fleshy, soft, and without

spicules. It is covered with a number of papillae of various sizes, mostly rounded, but around the branchial and rhinophoral openings they become columnar and completely close in these openings. Rhinophores perfoliate. Gills 6, tripinnate. Tentacles large, thick, flat, externally grooved. No labial armature. Radula teeth hamate, strong, with thickened bases.

These specimens correspond well with Abraham's figures and description of *Asteronotus mabilla* (Proc. Zool. Soc. Lond., 1877, p. 249, pl. xxviii, figs. 1-4). I can find, however, no trace of the dart in the reproductive organs, which is characteristic of this genus. Also there are no spicules in the skin of the present specimens.

The Nudibranch fauna of Tristan d'Acunha seems never to have been investigated, and it is therefore all the more regrettable that the present specimens are in such poor condition, and lack all data as to colour.

The nearest locality from which Nudibranchs have been recorded is Gough Island, where the "Scotia" obtained *Tritoniopsis brucei* Eliot, 1905.

EXPLANATION OF PLATES.

PLATE XIX.

FIG.

1. *Sphaerostoma aurantiacum*, n. sp. $\times 2$.
2. *Triopa lucida* Stmpon. $\times 3$.
- 3 and 4. *Glossodoris capensis* n. sp. Nat. size. Side view and dorsal views.
- 5 and 6. *Aphelodoris brunnea* Bgh. Nat. size. Two pattern variations.
- 7 and 8. *Polycera nigrocrocea* n. sp. Nat. size. Side and dorsal views.
9. *Doris* (?) *kalkensis* n. sp. Nat. size.
10. *Nembrotha capensis* Bgh. Nat. size.

PLATE XX.

1. *Melibe rosea* Rang. Nat. size.
2. *Glaucus atlanticus* Forst. Nat. size.
3. *Scyllaea pelagica* Linn. Nat. size.
4. *Idulia splendida* Trinch. $\times 3$.
5. *Idulia cinerea* Trinch. $\times 3$.
- 6 and 7. *Janolus capensis* Bgh. Nat. size. Two colour varieties.
8. *Cratena capensis* n. sp. $\times 3$.
- 9 and 10. *Hervia quadricolor* n. sp. $\times 1\frac{3}{4}$. With one papilla enlarged.